

## V. Claims

We claim:

1. A system for providing an internet protocol (IP) address to an IP enabled device, the address enabling the IP enabled device to obtain IP services independent of an internet service provider (ISP), comprising:
  - an access provider network comprising a plurality of managed Open Systems Interconnection (OSI) model layer 2 and layer 2/3 communications elements;
  - the IP enabled device in communication with the provider network via an access device; and
  - an IP aware e-center in communication with the provider network, the e-center comprising an additional layer 3 communications element in communication with a host configuration server and one of the provider network layer 2/3 communications elements, the host configuration server providing the access device a first IP address for obtaining IP services offered within the provider network, the access device providing the IP enabled device a second IP address for obtaining IP services offered within the provider network.
2. The system of claim 1, wherein the IP enabled device comprises an IP telephone, the provider network further comprises a public switched telephone network (PSTN) gateway in communication with the provider network layer 2/3 communications element, and the e-center further comprises a call agent in communication with the e-center layer 3 router for coordinating the operations of the IP telephone and the PSTN gateway.
3. The system of claim 1, wherein the IP enabled device comprises a personal computer.
4. The system of claim 1, wherein the IP enabled device comprises an IP enabled appliance.
5. The system of claim 1, wherein the e-center further comprises a user network management system in communication with the additional layer 3 communications

element.

6. The system of claim 1, wherein the e-center further comprises a streaming media server in communication with the additional layer 3 communications element.
7. The system of claim 1, wherein the provider network further comprises a broadband access interface in communication with the one provider network layer 2/3 communications element.
8. The system of claim 1, wherein the IP enabled device resides on a local area network (LAN) in communication with the access device.
9. The system of claim 8, wherein the access device utilizes Network Address Translation (NAT) protocol to provide the second address.
10. The system of claim 1, wherein the host configuration server comprises a Dynamic Host Configuration Protocol (DHCP) server.
11. The system of claim 1, wherein the host configuration server comprises a Remote Authentication Dial In User Service (RADIUS) server.
12. A method for allowing an IP enabled device to obtain IP services available within an access provider network independent of an ISP, comprising:
  - providing a communication link between an IP aware e-center and a layer 2/3 communications element within the access provider network, the e-center comprising a layer 3 communications element in communication with a host configuration server;
  - providing a first communication link between the IP enabled device and an access device;
  - providing a second communication link between the access device and the layer 2/3 communications element; and
  - transmitting a first IP address to the device from the host configuration server over the first and second communication links via the access device

13. The method of claim 12, wherein the transmitting step comprises transmitting the first IP address to the access gateway over the second communication link, generating at the access gateway a second IP address, and transmitting the second IP address to the IP enabled device over the first communication link.

14. The method of claim 13, wherein the generating is accomplished using NAT protocol.

15. A method for simultaneously enabling a first of a plurality of IP enabled devices to obtain IP services available only within an access provider network and a second of the IP enabled devices to obtain IP services available through an ISP, the IP enabled devices residing on a LAN with an access device, the access provider network comprising a managed network of layer 2 and layer 2/3 communications elements, comprising:

providing a first communication link between an IP aware e-center and a first one of the access provider network layer 2/3 communications elements, the e-center comprising an additional layer 3 communications element in communication with a host configuration server;

providing a second communication link between a second one of the access provider network layer 2/3 communications elements and the ISP;

providing a third communication link between the access device and the first access provider network layer 2/3 communications element;

transmitting a first IP address to the first IP enabled device from the host configuration server, the first IP address providing access to the services available only within the access provider network;

transmitting a second IP address to the second IP enabled device from the ISP network, the second IP address providing access to the services available through the ISP.

16. The method of claim 15, wherein the transmitting a first IP address step comprises transmitting the first IP address to the access device, generating at the access device a third IP address, and transmitting the third IP address to the first IP enabled device.

17. The method of claim 16, wherein the third IP address is generated using NAT protocol.

18. The method of claim 15, wherein the transmitting a second IP address step comprises transmitting the second IP address to the access device, generating at the access device a fourth IP, and transmitting the fourth IP address to the second IP enabled device.

19. The method of claim 18, wherein the fourth IP address is generated using NAT protocol.

20. A system for establishing a plurality of simultaneous personalized IP service sessions over a single connection to an access provider network, comprising:

a plurality of IP enabled devices and an access gateway residing on a LAN;

and

an ingress layer 2/3 communications element within the access provider network in communication with the access gateway;  
the access gateway and ingress layer 2/3 communications element adapted to recognize and redirect based on the recognition multiple instances of PPP frames being transmitted to and from the IP enabled devices simultaneously.

21. The system of claim 20 wherein the access gateway and ingress layer 2/3 communications element is further adapted to simultaneously recognize and redirect based on the recognition at least one instance of IP packets being transmitted to and from at least one of the IP enabled devices.

22. A method for providing personalized IP services to an IP enabled device residing on a local area network (LAN) with an access device, the access device in communication with an access provider network, comprising:

communicating a first IP address to the access device, the first address allowing the access device to communicate with a first plurality of IP service devices through an Internet service provider (ISP), the ISP in communication with the access network;

communicating a second IP address to the access device, the second address

allowing the access device to communicate with a second plurality of IP service devices in the access provider network;

communicating a third IP address to the enabled device, the third IP address allowing the IP enabled device to send and receive IP packets over the LAN;

receiving IP traffic from the IP enabled device at the access device;

determining at the access device whether the IP traffic is addressed to one of the second IP service devices;

forwarding the IP traffic to the one of the second IP service devices with the second address as a return address if the determining step is positive; and

forwarding the IP traffic to the ISP with the first address as the return address if the determining step is negative.

23. The method of claim 22 wherein the communicating a second IP address step comprises leasing the second IP address to the access device using DHCP.

24. The method of claim 22 wherein the communicating a second IP address step comprises leasing the second IP address to the access device using RADIUS.

25. The method of claim 20 wherein the communicating a third IP address comprises generating a third IP address at the access device Network Address Translation (NAT) protocol and transmitting the third address to the IP enabled device over the LAN.